

The $^{12}\text{C}/^{13}\text{C}$ ratio as a chemistry indicator

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Isotopic ratios of elements are considered powerful tools, e.g. in tracing the origin of solar system body materials, or the degree of nucleosynthesis processing throughout the Galaxy. In interstellar molecules, some isotopic ratios like H/D and $^{12}\text{C}/^{13}\text{C}$ can also be used as indicators of their chemical origin. Isotope fractionation in gas-phase chemical reactions and gas-dust interaction makes observations of the ratio between ^{12}C and ^{13}C isotopologues suitable to distinguish between different formation scenarios.

We will present observations of the $^{12}\text{C}/^{13}\text{C}$ ratio in methanol and formaldehyde towards a sample of embedded, massive young stellar objects. In relation to this we also present results from theoretical modeling showing the usefulness of the $^{12}\text{C}/^{13}\text{C}$ ratio as a chemistry indicator.